

# SRT411-Assignment0

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## 3.1 Calculator

Percentage of your life you have spent at this university.

```
((2019-2017)/(2019-1990))*100
```

```
## [1] 6.896552
```

## 3.2 Workspace

Percentage of your life you have spent at this university. (Using Variables)

```
curent_year = 2019
born_year = 1998
start_year = 2016
(start_year-curent_year)/(curent_year-born_year)*100
```

```
## [1] -14.28571
```

## 3.4 Functions

Compute the sum of 4, 5, 8 and 11 by first combining them into a vector and then using the function sum.

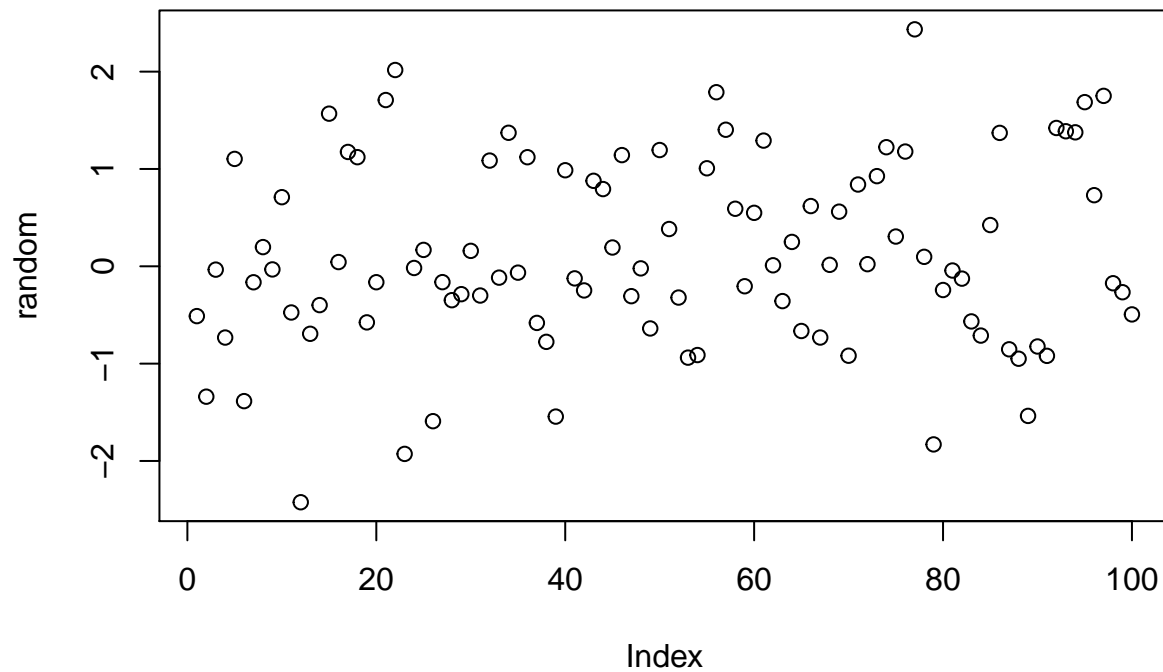
```
func = c(4,5,8,11)
sum(func)
```

```
## [1] 28
```

## 3.5 Plots

Plot 100 normal random numbers.

```
random=rnorm(100)
plot(random)
```



## 4 Help and documentation

Find help for the `sqrt` function.

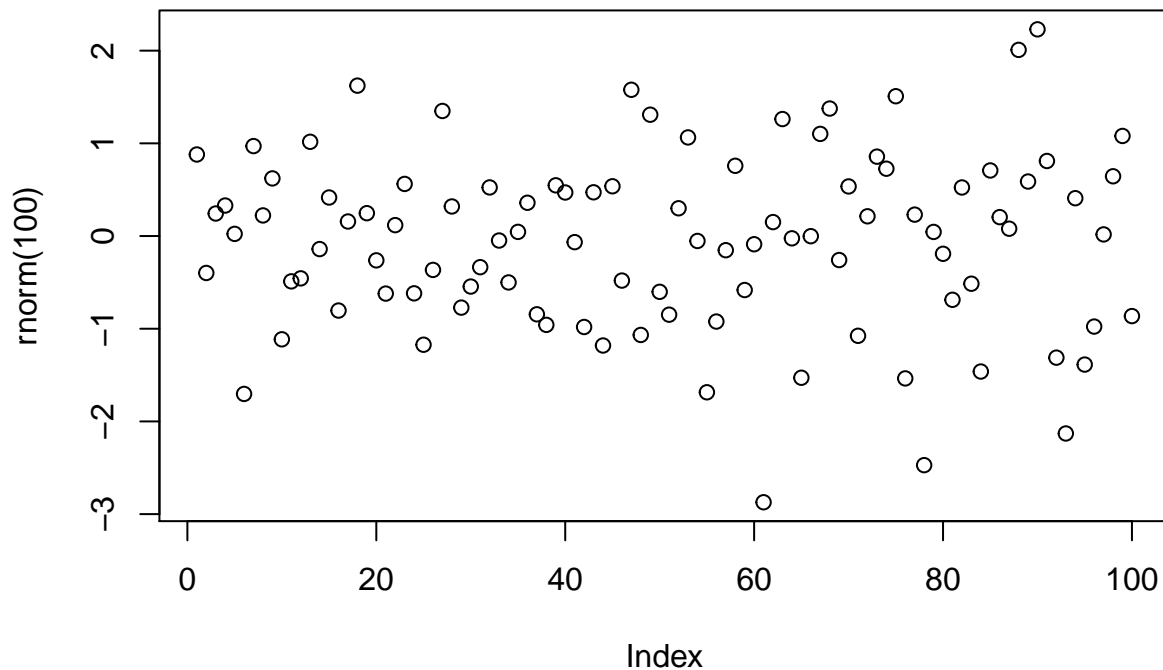
```
help(sqrt)
```

```
## starting httpd help server ... done
```

## 5 Scripts

Make a file called `firstscript.R` containing Rcode that generates 100 random numbers and plots them, and run this script several times.

```
source("firstscript.R")
```



## 6.2 Matrices

Put the numbers 31 to 60 in a vector named `P` and in a matrix with 6 rows and 5 columns named `Q`.

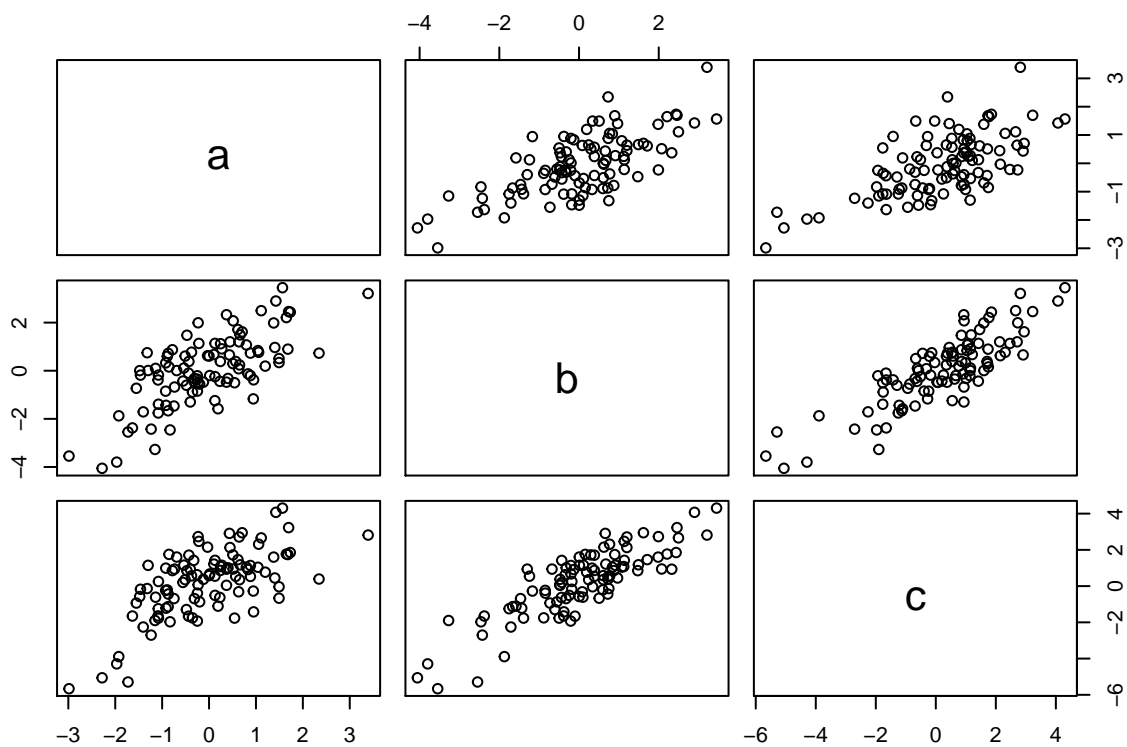
```
P = seq(from=31, to=60, by=1)
Q=matrix(P,nrow=6,ncol=5)
Q
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]  31  37  43  49  55
## [2,]  32  38  44  50  56
## [3,]  33  39  45  51  57
## [4,]  34  40  46  52  58
## [5,]  35  41  47  53  59
## [6,]  36  42  48  54  60
```

## 6.3 Data frames

Make a script file which constructs three random normal vectors of length 100.

```
x1=rnorm(100)
x2=rnorm(100)
x3=rnorm(100)
t = data.frame(a=c(x1), b=c(x1+x2), c=c(x1+x2+x3))
plot(t)
```



```
sd(t$a)
```

```
## [1] 1.077067
```

```
sd(t$b)
```

```
## [1] 1.455964
```

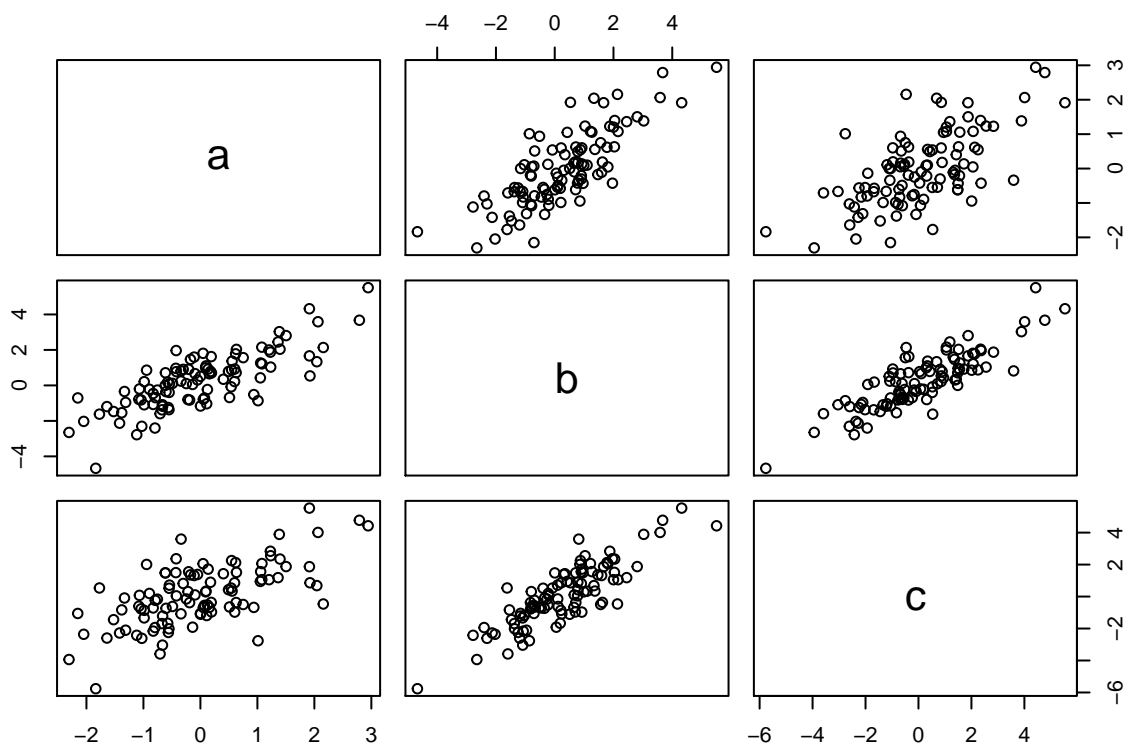
```
sd(t$c)
```

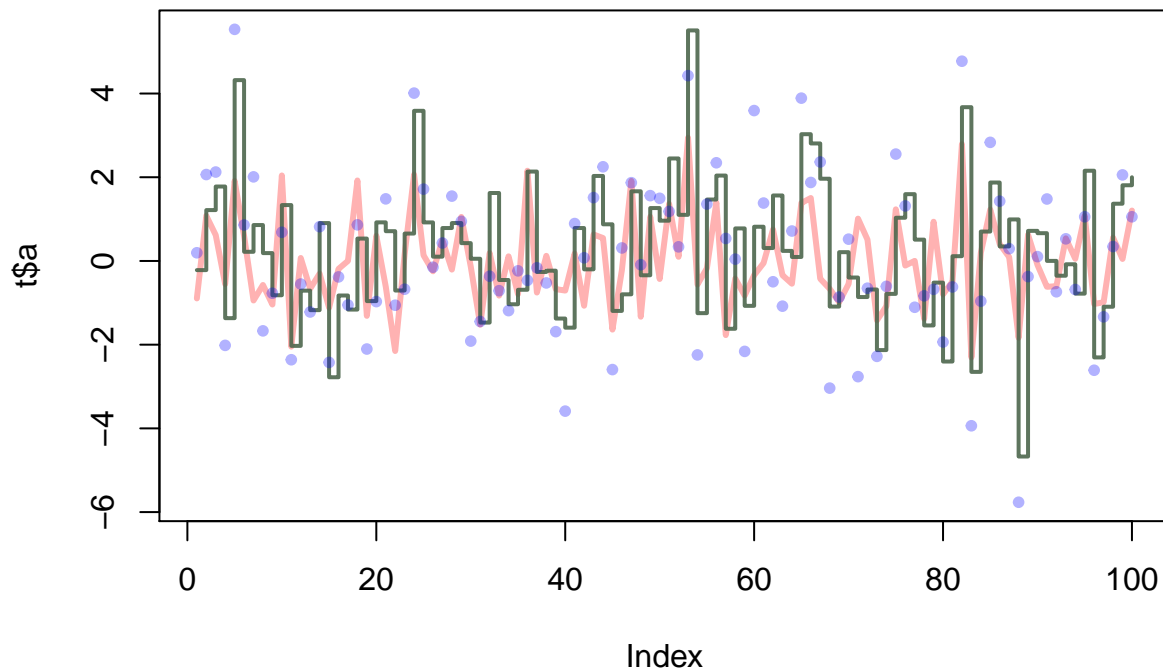
```
## [1] 1.844989
```

## 7 Graphics

### Script

```
source("secondscript.R")
```





## 8 Reading and writing data files

Make a file called `tst1.txt` in Notepad from the example in Figure 4 and store it in your working directory. Write a script to read it, to multiply the column called `g` by 5 and to store it as `tst2.txt`.

```
source("thirdscript_write.R")
```

## 9 Not available data

Compute the mean of the square root of a vector of 100 random numbers. What happens?

```
vector=rnorm(100)
cal=sqrt(vector)
```

```
## Warning in sqrt(vector): NaNs produced
```

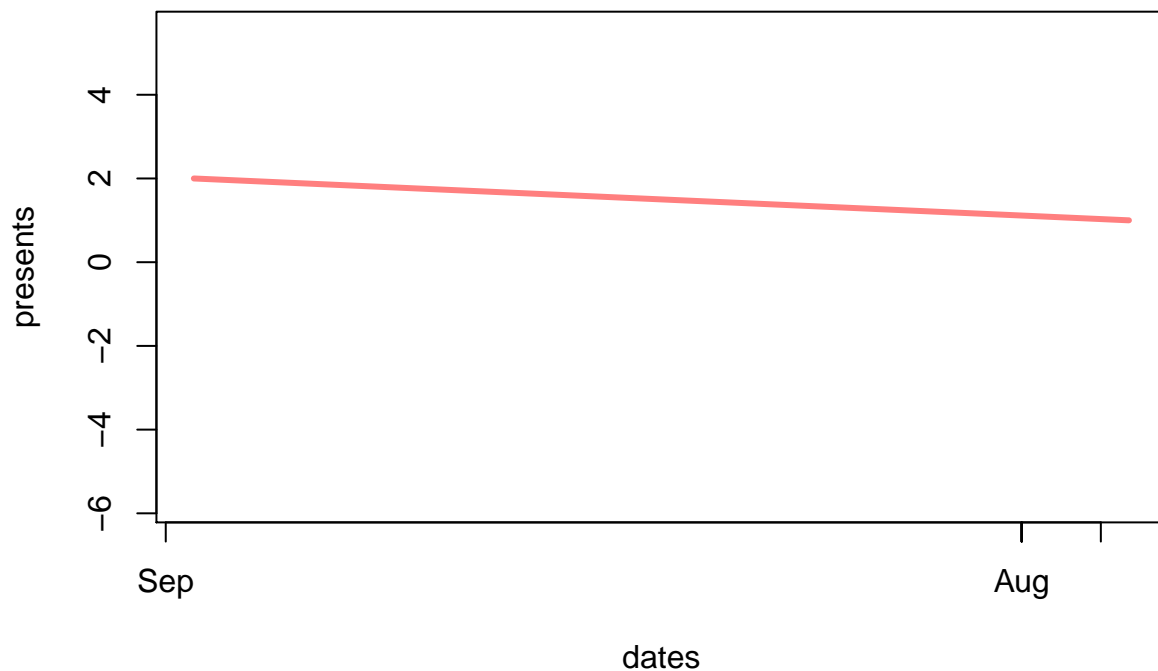
```
result= mean(cal)
result
```

```
## [1] NaN
```

## 10.2 Dates

Make a graph with on the x-axis: today, Sinterklaas 2014 and your next birthday and on the y-axis the number of presents you expect on each of these days. Tip: make two vectors first.

```
dates=strptime(c("20190912", "20200912"), format="%Y%m%d")
presents = c(2,1)
plot(dates, presents, type="l", ylim=range(t),lwd=3, col=rgb(1,0,0,0.5))
```



## 11.2 For-loop

Make a vector from 1 to 100. Make a for-loop which runs through the whole vector. Multiply the elements which are smaller than 5 and larger than 90 with 10 and the other elements with 0.1.

```
vector2=seq(1,100)
for(number in vector2)
{
  if(number<5|number>90)
  {
    vector2[number] = number*10
  }else{
    vector2[number] = number*0.1
  }
}
vector2
```

##	[1]	10.0	20.0	30.0	40.0	0.5	0.6	0.7	0.8	0.9	1.0
##	[11]	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
##	[21]	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
##	[31]	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0
##	[41]	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0
##	[51]	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0
##	[61]	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0
##	[71]	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0
##	[81]	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	9.0
##	[91]	910.0	920.0	930.0	940.0	950.0	960.0	970.0	980.0	990.0	1000.0